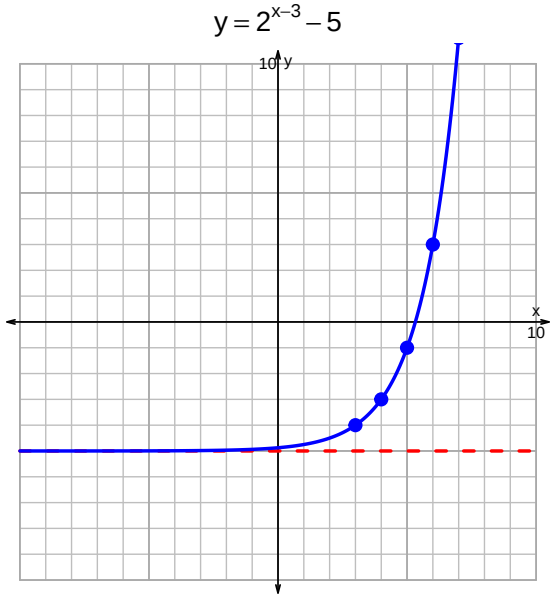
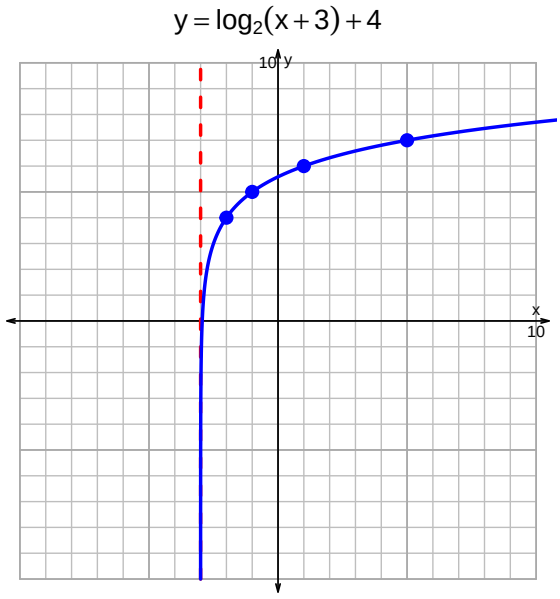
Name: Date:

s18quiz: EXP LOG (Solution v124)

1. Graph $y = 2^{x-3} - 5$ and $y = \log_2(x+3) + 4$ on the grids below. Also, draw any asymptotes with dotted lines.





2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$13 = \left(\frac{7}{4}\right) \cdot 2^{5t/3}$$

Divide both sides by $\frac{7}{4}$.

$$\frac{13 \cdot 4}{7} = 2^{5t/3}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{13 \cdot 4}{7}\right) = \frac{5t}{3}$$

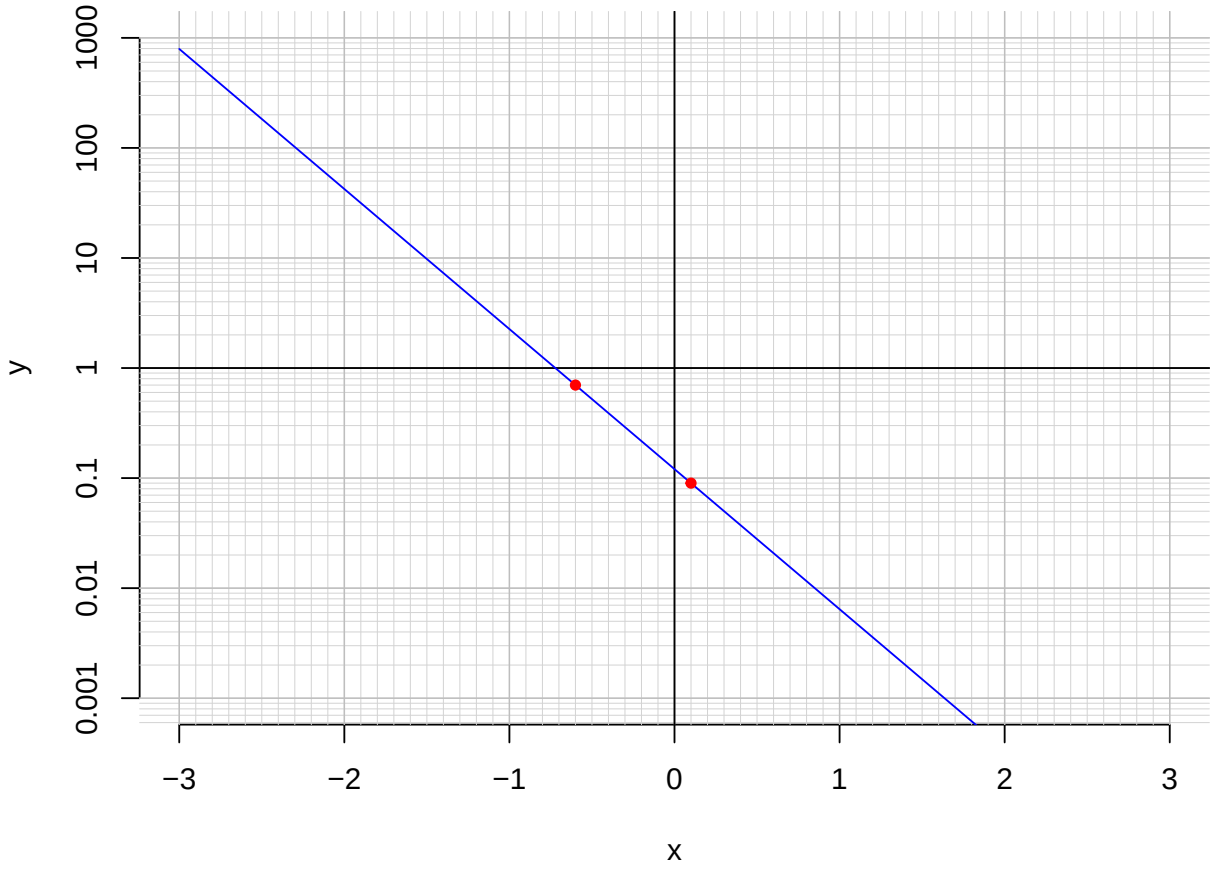
Divide both sides by $\frac{5}{3}$.

$$\frac{3}{5} \cdot \log_2\left(\frac{13 \cdot 4}{7}\right) = t$$

Switch sides.

$$t = \frac{3}{5} \cdot \log_2\left(\frac{13 \cdot 4}{7}\right)$$

3. An exponential function $f(x) = 0.121 \cdot e^{-2.93x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-0.6)$.

$$f(-0.6) = 0.7$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{2.93} \cdot \ln\left(\frac{x}{0.121}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.09)$.

$$f^{-1}(0.09) = 0.1$$